

IN THE UNITED STATES PATENT OFFICE

In re application of:

Examiner: TBA

A. Stojc, S. Evans

Attorney Docket: WAB 03220

Serial No.: TBA

Date: April 21, 2004

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**Title: DOOR SYSTEM FOR TRANSIT VEHICLE UTILIZING
COMPRESSION LOCK ARRANGEMENT**

COMMISSIONER FOR PATENTS

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Sir:

INFORMATION DISCLOSURE STATEMENT

The following citation of Patent Art and/or other information is being submitted to comply with the duty of disclosure under Rule 1.56. It is hereby requested that the Examiner consider the art and/or other information cited on the attached PTO Form PTO/SB/O8A.

A copy of the cited art is enclosed herewith.

The United States Patent 6,189,285 One-Or Two-Leaf Sliding Door, Swinging Door or Pocket Door discloses a door system wherein the locking of the door is achieved without the use of the overcenter or solenoid type lock mechanisms. As illustrated in FIG. 5, a locking arrangement consists of a complex clutch (24-28) or brake in combination with a freewheel (23) which is mounted on the spindle (12) disposed within a powered door drive. The freewheel (23) is disposed at the first end of the spindle (12) and connected to a clutch or a brake via a receptacle (22). The freewheel, essentially, enables rotation of the spindle (12) in the closing direction without disengagement with the clutch (24-28). The clutch (24-28) controls rotation of the spindle (12) in the

The clutch (24-28) controls rotation of the spindle (12) in the opening direction. A drive element (10) enabling spindle (12) rotation and, more importantly enabling door (1, 2) movement, is disposed at the distal end of the spindle (12). The special arrangement of the freewheel (23) and brake results in a final closing position region in which the door (1, 2) is secured against unwanted opening instead of the fixed final closing position determined by the overcenter or solenoid type lock mechanisms. This results in a substantial simplification in assembly because, for example, there is no longer any need to allow for rubber seals of varying width to achieve required sealing against environmental factors.

As best understood, the receptacle (22), when held in a stationary condition in respect to spindle (12) rotation, enables rotation of the spindle (12) in the closing direction. In order to open the doors (1, 2), the receptacle (22) must be released and enabled to rotate with the spindle (12). As best understood, this is achieved by electrical release of the clutch (24-28) enabling the release of the disk (25) from engagement with counter disks (27, 28) which are disposed within the clutch and further enabling rotation of the shaft (24) and the receptacle (22) which is integral with shaft (24) in respect to the rotation of the spindle (12) in the opening direction.

In the emergency condition, manual opening of the door (1, 2) is enabled via a Bowden cable (15) attached to the rod (14) at one end and attached to the manual release handle at the distal end. Actuation of the cable (15) displaces rod (14) enabling release of the clutch (24-28) via a swiveling cam (not shown) so that disk (25) connected to shaft (24) is likewise released.

There are several disadvantages to the prior art design disclosed in US 6,189,285. In the first aspect, the prior art design requires the use of the freewheel (23) and receptacle (22), in addition to clutch (24-28) and brake, as an essential elements,

to achieve locking and unlocking of the door (1, 2). Such components increase the complexity and cost of the door system and reduce its reliability.

In the second aspect, failure of the clutch mechanism, or failure of the freewheel (23), or failure of the receptacle (22), which are all single point failures, may create a hazardous condition wherein the spindle (12) unintentionally rotates in the opening direction and, more importantly, the door (1, 2) opens unintentionally during transit vehicle movement due to normal vibration, vehicle deceleration and acceleration or the patron leaning against the door (1, 2) thus enabling its movement in the opening direction. The disclosure does not teach means for detecting and annunciating such failures and it is well known in the art that such detection would not be obvious to the person of the ordinary skill in the art. Additionally, the adaptation of the roller (18) and a stop surface (17) provides locking redundancy only in the case of a swinging or swinging/sliding combination door type and not in the case of the sliding type, particularly, of the pocket configuration, as those skilled in the art will appreciate that such roller (18) will be disposed within the path of the sliding door (1, 2), thereby preventing its full movement. Adaptation of the prior art design to enable roller (18) to disengage from the door (1, 2) prior to opening movement will result in a presence of the mechanical lock mechanism (or a dead-center mechanism) that the prior art claims to have eliminated. Therefore, the prior art design does not provide locking redundancy in preventing unintentional opening of the door (1, 2) of the sliding or sliding pocket type.

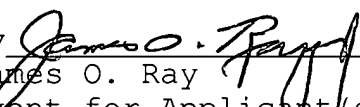
In the third aspect, described locking arrangement does not provide for combination of locking the door (1, 2) in the pushback mode and enabling claimed sealing advantages due to presence of the freewheel (23) and receptacle (22). As best understood, a spring loaded link arrangement maybe fitted between the drive nut (21) and

the door (1, 2) enabling pushback thereof. However, as was aforementioned, such spring loaded link arrangement will negate the adaptation of the clutch (24-28) or brake to achieve desirable sealing by enabling incremental longitudinal movement of the door (1, 2) which is independent from the action of the clutch (24-28).

It is not intended that the cited art be construed as the best art available, and it is urged that the Examiner conduct a full, complete and independent search and evaluation of all available art.

Applicant and/or his attorney or agent may have been exposed to other art related to the general area of the subject application. If such exposure has in fact occurred, applicant and/or his agent may not have made a detailed analysis of such other art and/or its relation to the present invention. It is respectfully requested that the Examiner not rely upon the above citation for any evaluation of the subject application and include all available art within the scope of his independent search.

Respectfully submitted,

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First Named Inventor	A. Stojc
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Examiner Name	TBA
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U. S. PATENT DOCUMENTS

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FOREIGN PATENT DOCUMENTS

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